



Armed Forces College of Medicine AFCM



THE RECTUM

Presented by
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INTENDED LEARNING OBJECTIVES (ILO)

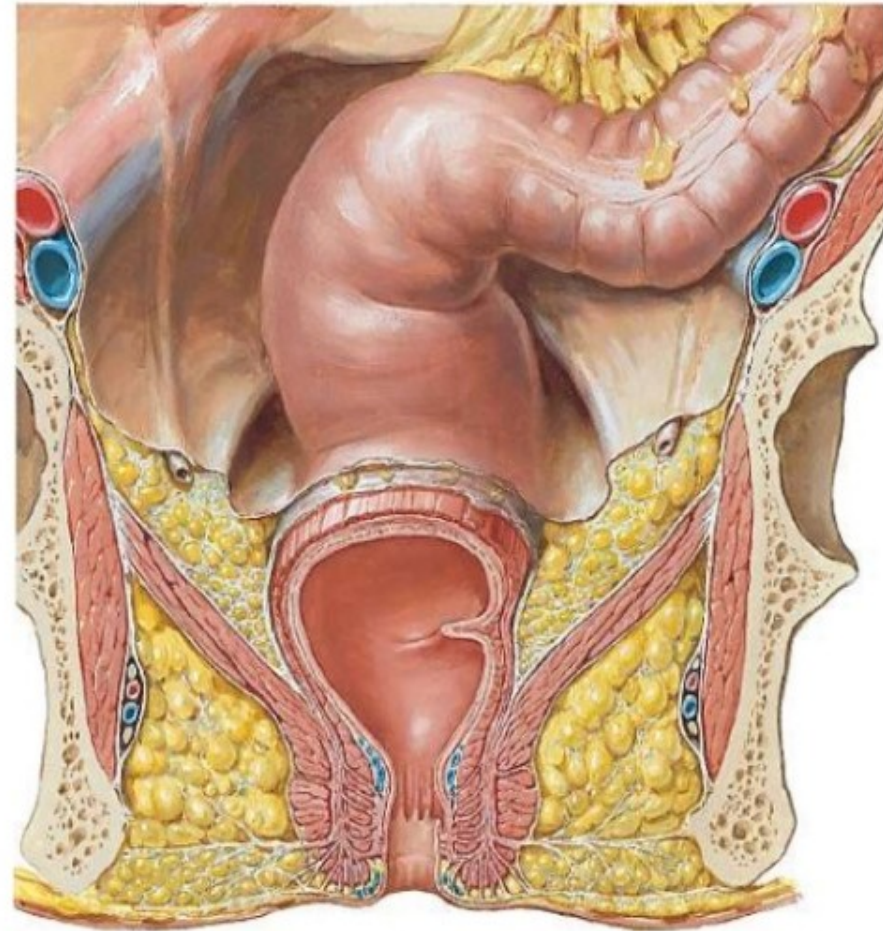


By the end of this lecture the student will be able to:

1. Describe the shape, site, size & peritoneal covering of the rectum.
2. Describe the relations & related applied anatomy of the rectum.
3. Describe the blood supply & lymphatic drainage of the rectum with its relevant clinical importance.

Rectum

- Lower dilated part of large gut lies in pelvis
- B/w Sigmoid colon and Anal canal
- Devoid of taenia coli, sacculations, appendices epiploicae and mesentery



Rectum – Extent & Course

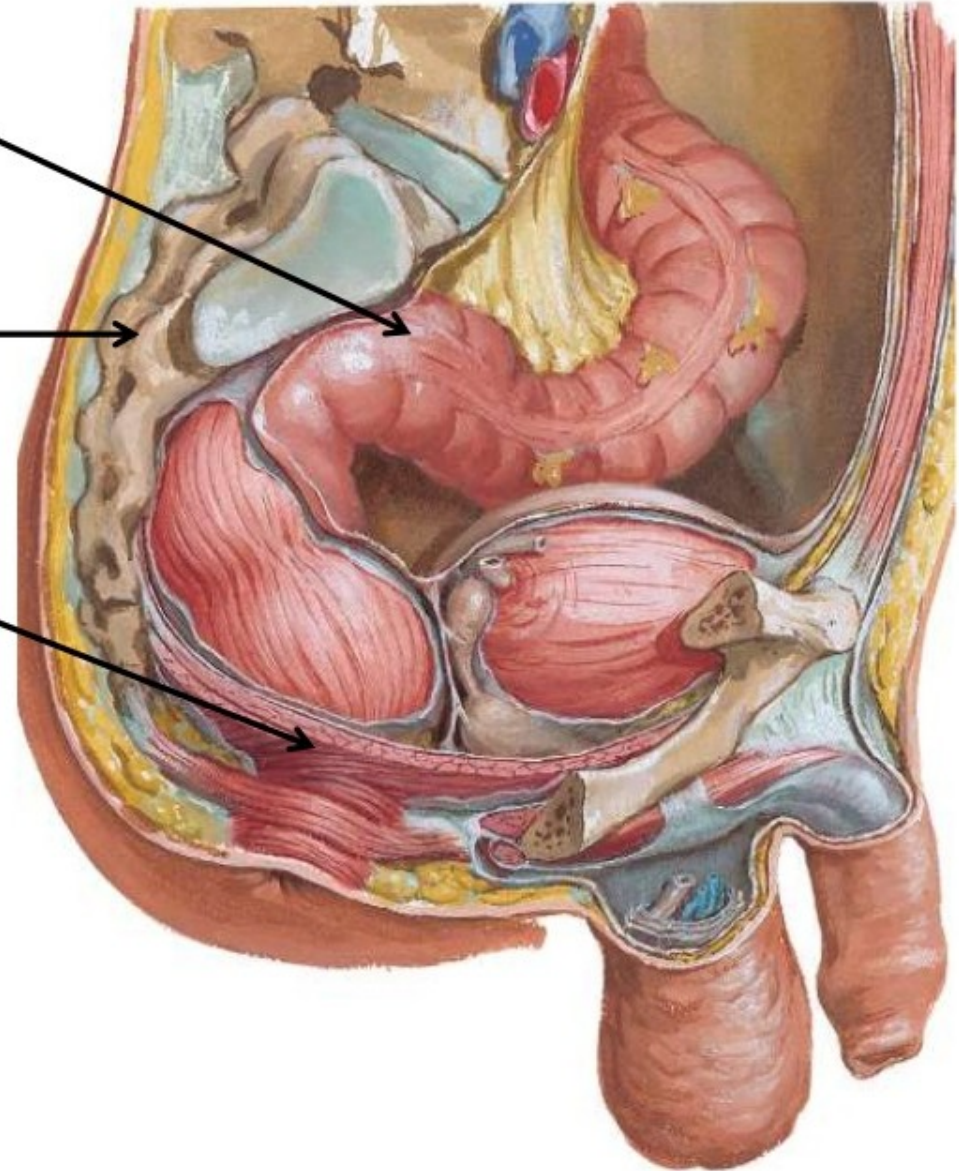
Begins as continuation of sigmoid colon

Opposite S3

Ends at a point: 2-3cm in front & little below tip of coccyx

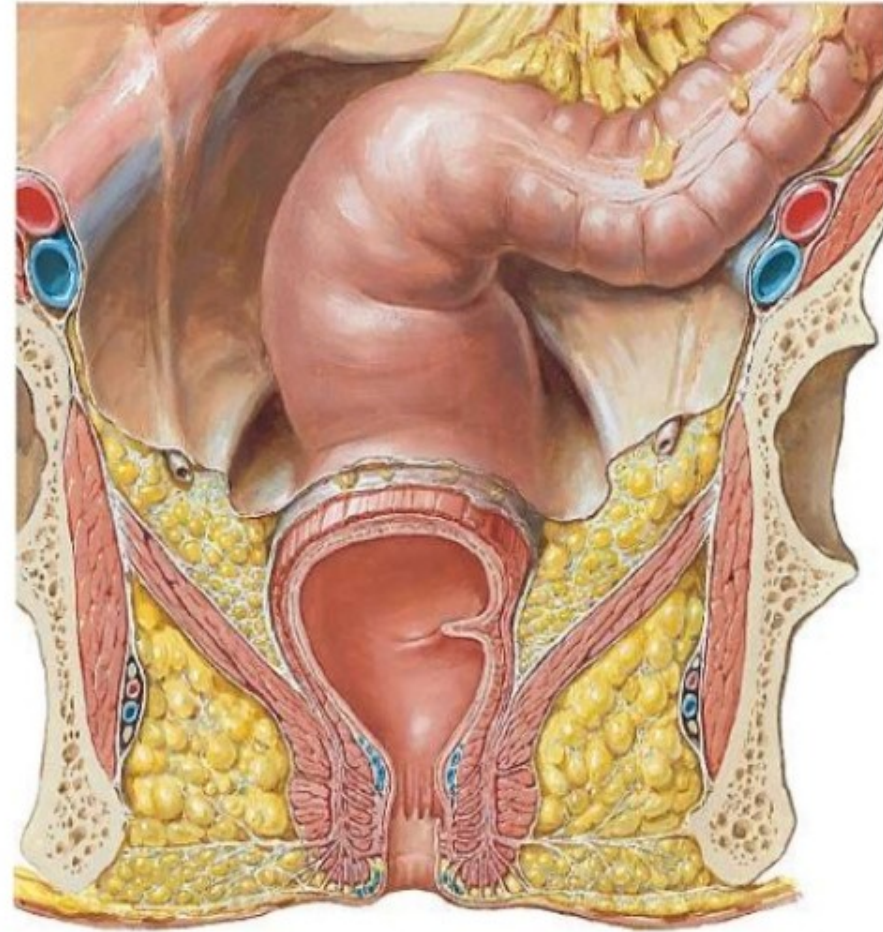
Ano-rectal Junction

Lies at level of apex of prostate



Rectum - Measurements

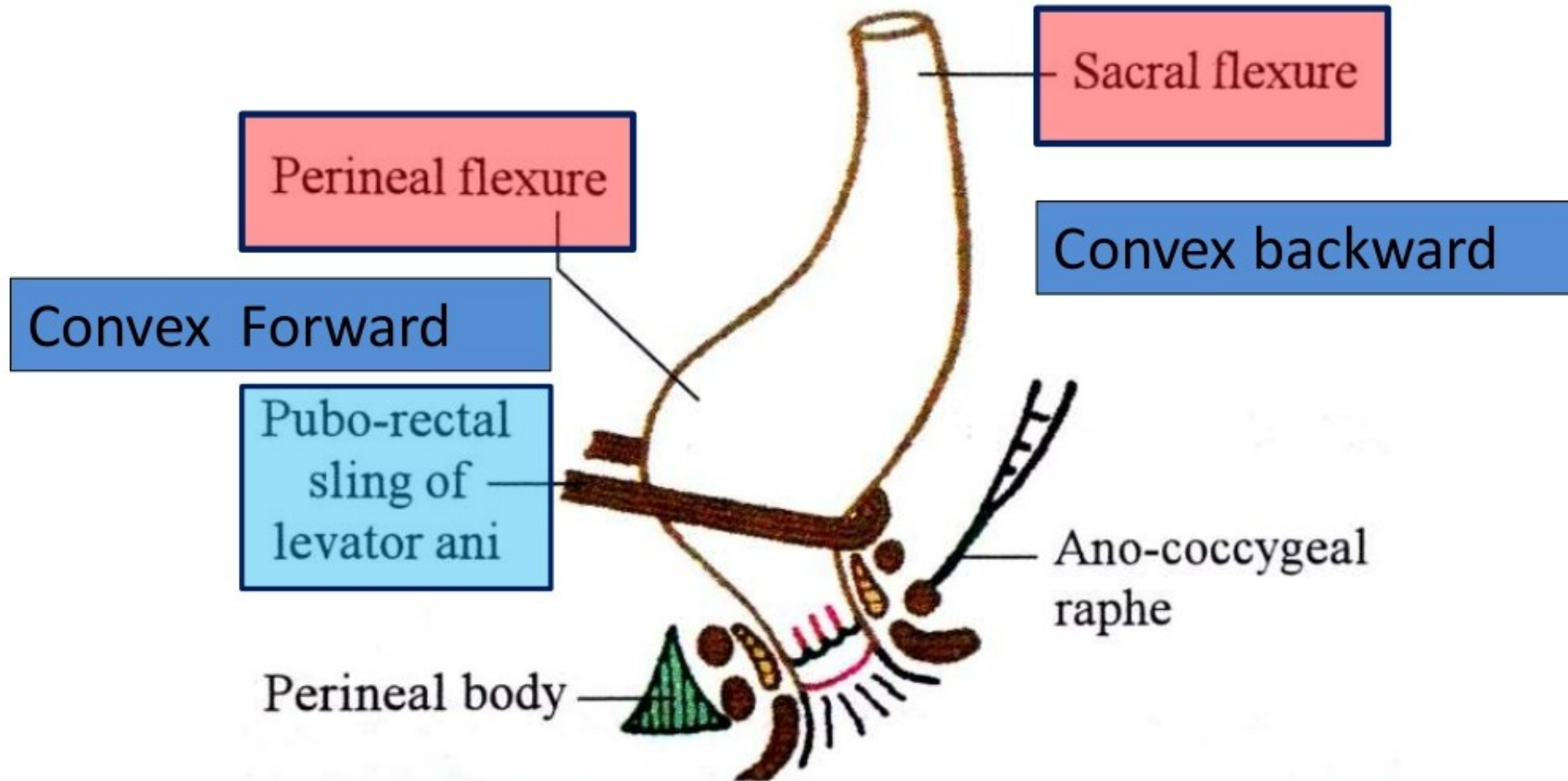
- Length = 12cm
- Breadth = 4cm
- Lower dilated part –
Ampulla
- When empty – Transverse
slit



Rectum - Curvatures

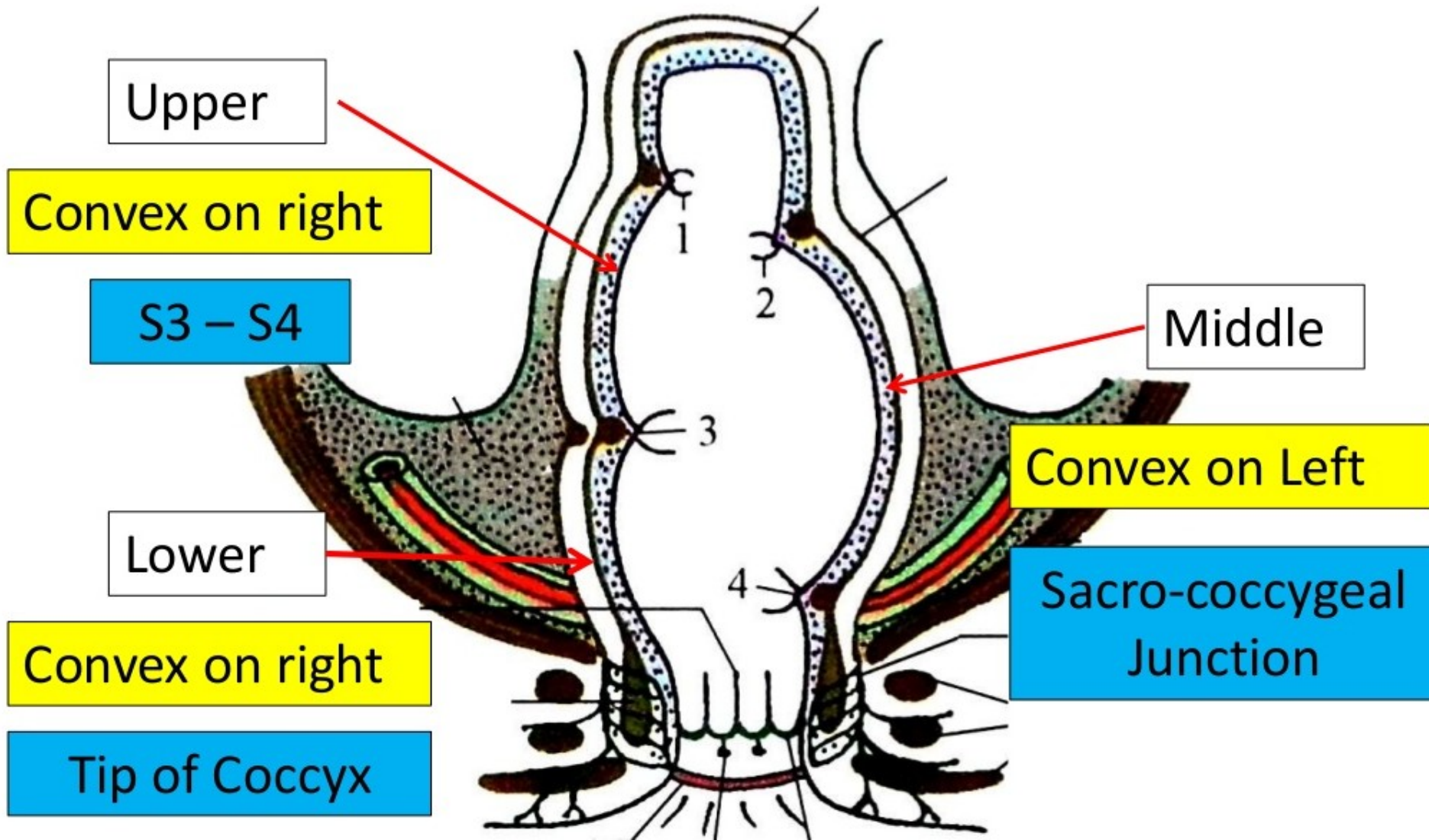
- 2 types :- Antero-posterior & Lateral

Antero-posterior Curves



Rectum - Curvatures

Lateral Curves



THE RECTUM

❑ **Site:** The rectum is a downward continuation of the pelvic colon opposite the 3rd piece of sacrum. It ends at anorectal junction, one inch below and in front of tip of coccyx.

❑ **Shape**

no taeniae coli. ,no saculations (haustrations), no appendices epiploicae

❑ **Dimensions:** Its length is 12 cm, its diameter is 4 cm in the upper part.

Its lower part being not covered by peritoneum is dilated to form the ampulla.

❑ **Flexures : 2 types of flexures.**

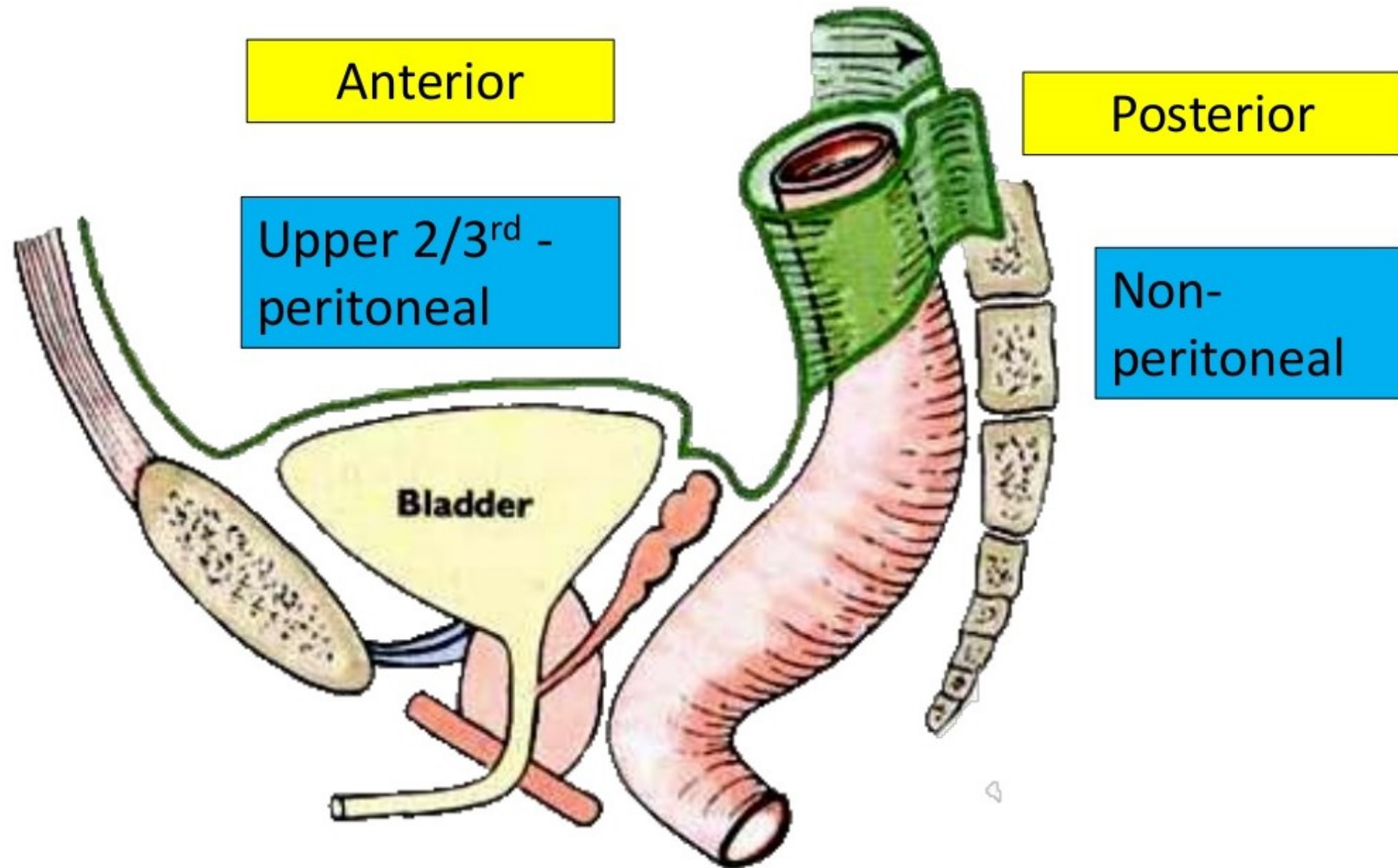
A. Anteroposterior flexures:

1. Sacral flexure is concave anteriorly.
2. Perineal flexure is convex anteriorly at the anorectal junction where rectum is turned backwards to become the anal canal.

B. Three lateral flexures:

Relations

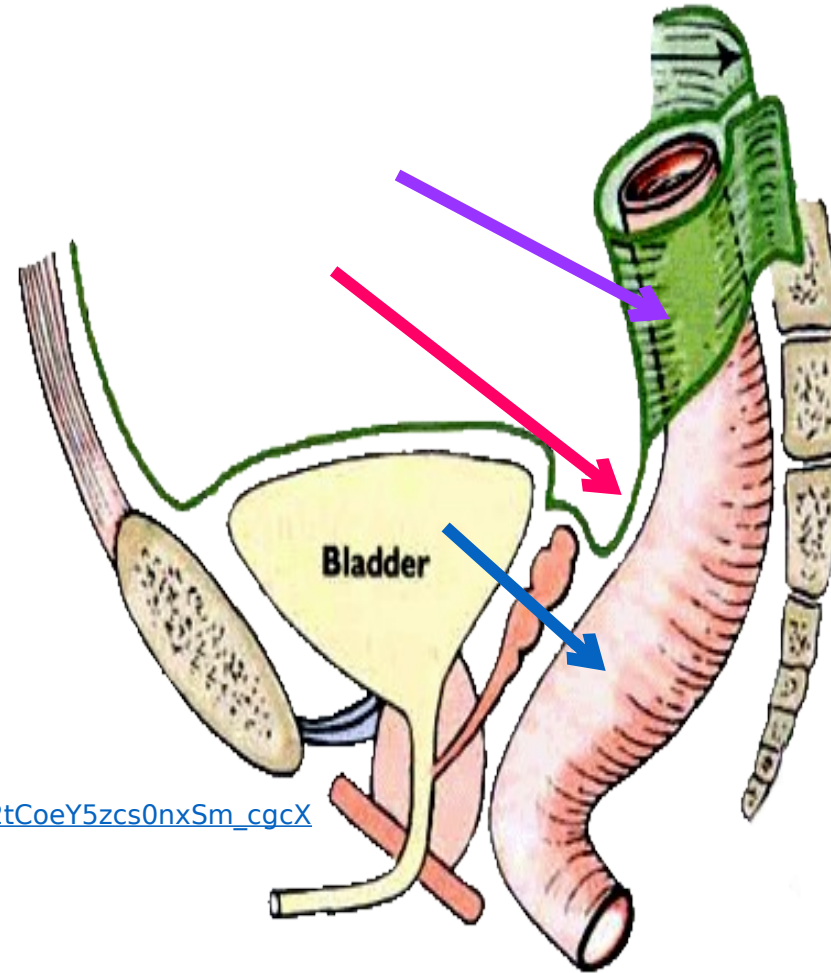
Peritoneal Relations



Peritoneal covering

- **Upper 1/3** ☐ covered on front & sides
- **Middle 1/3** ☐ covered on front only
- **Lower 1/3** ☐ no peritoneal covering

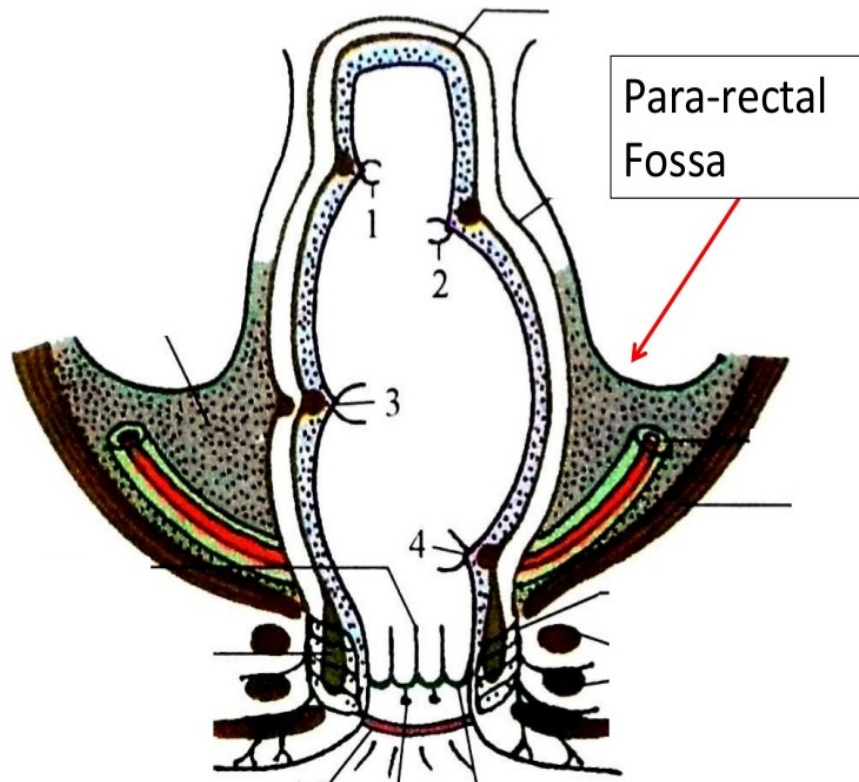
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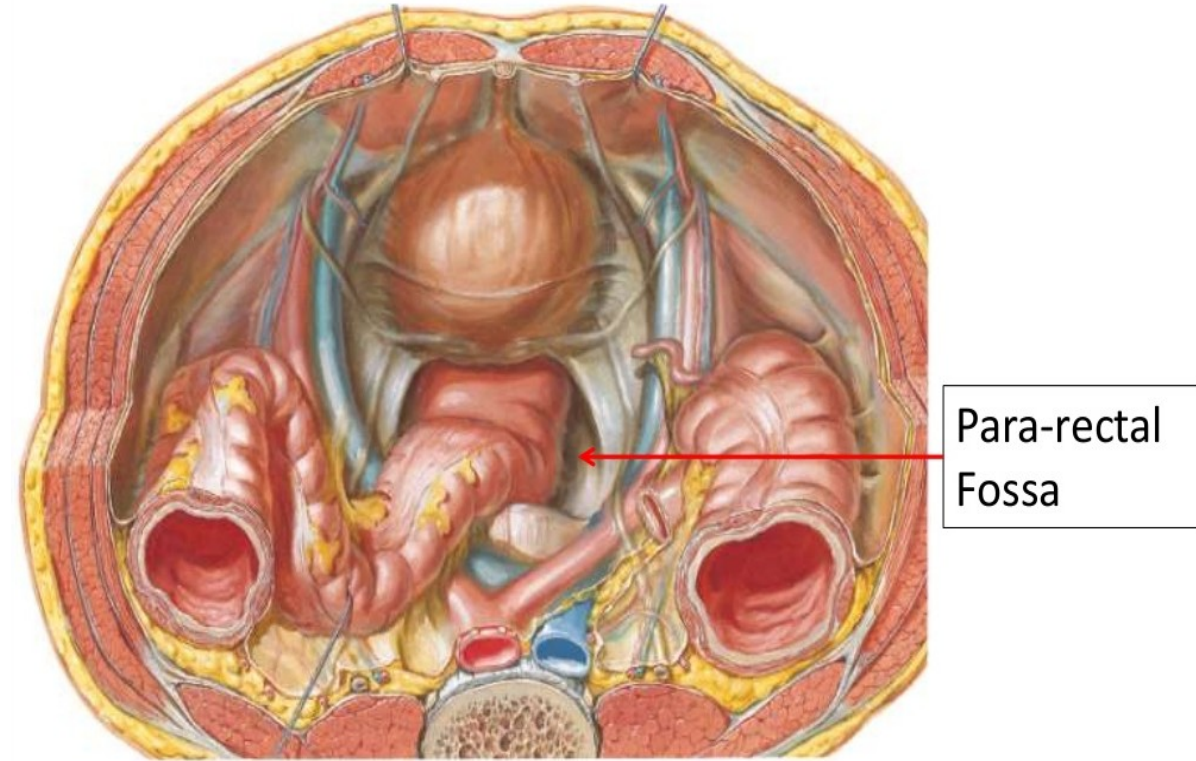
Relations

Peritoneal Relations

On each Side

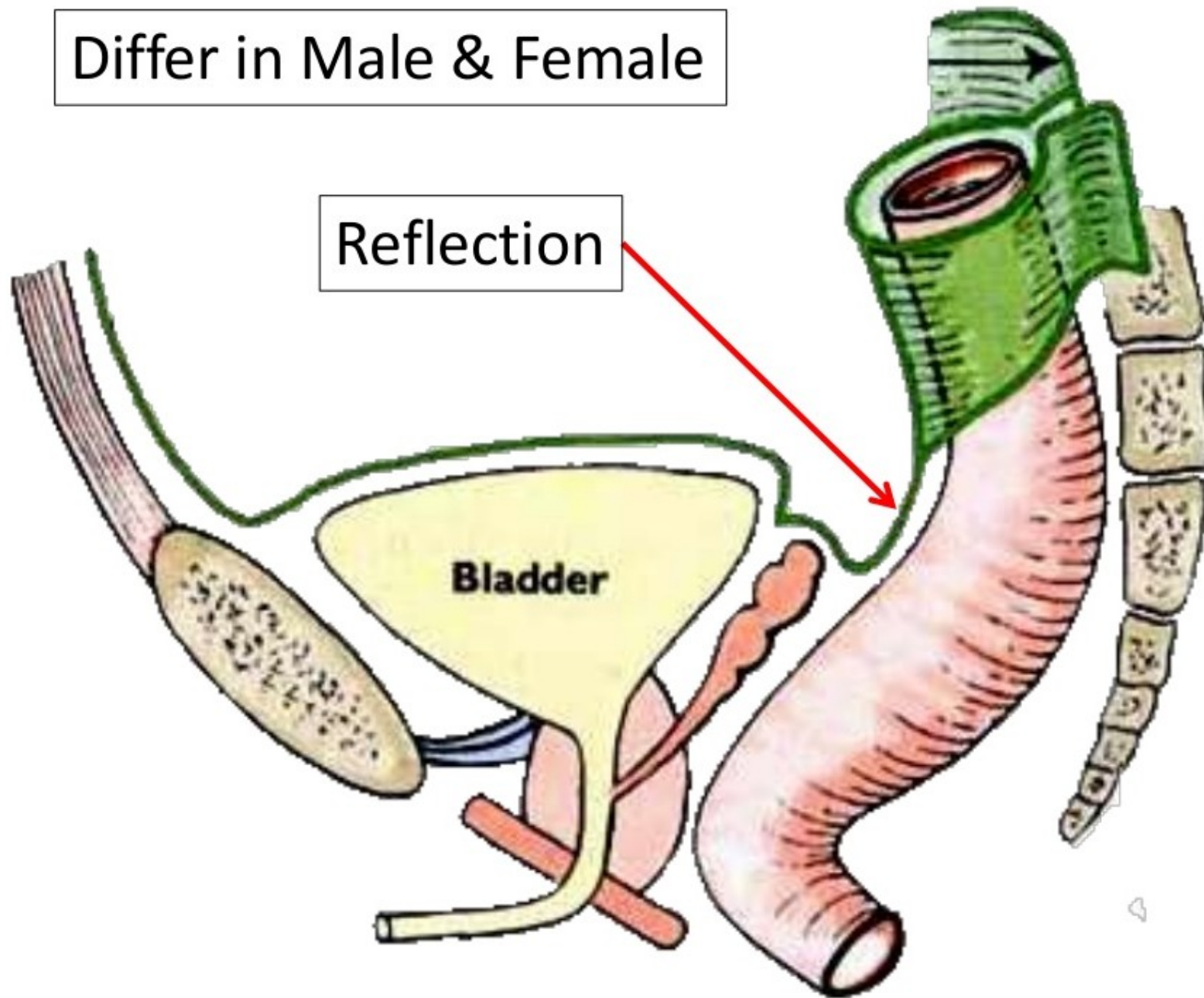


On each Side



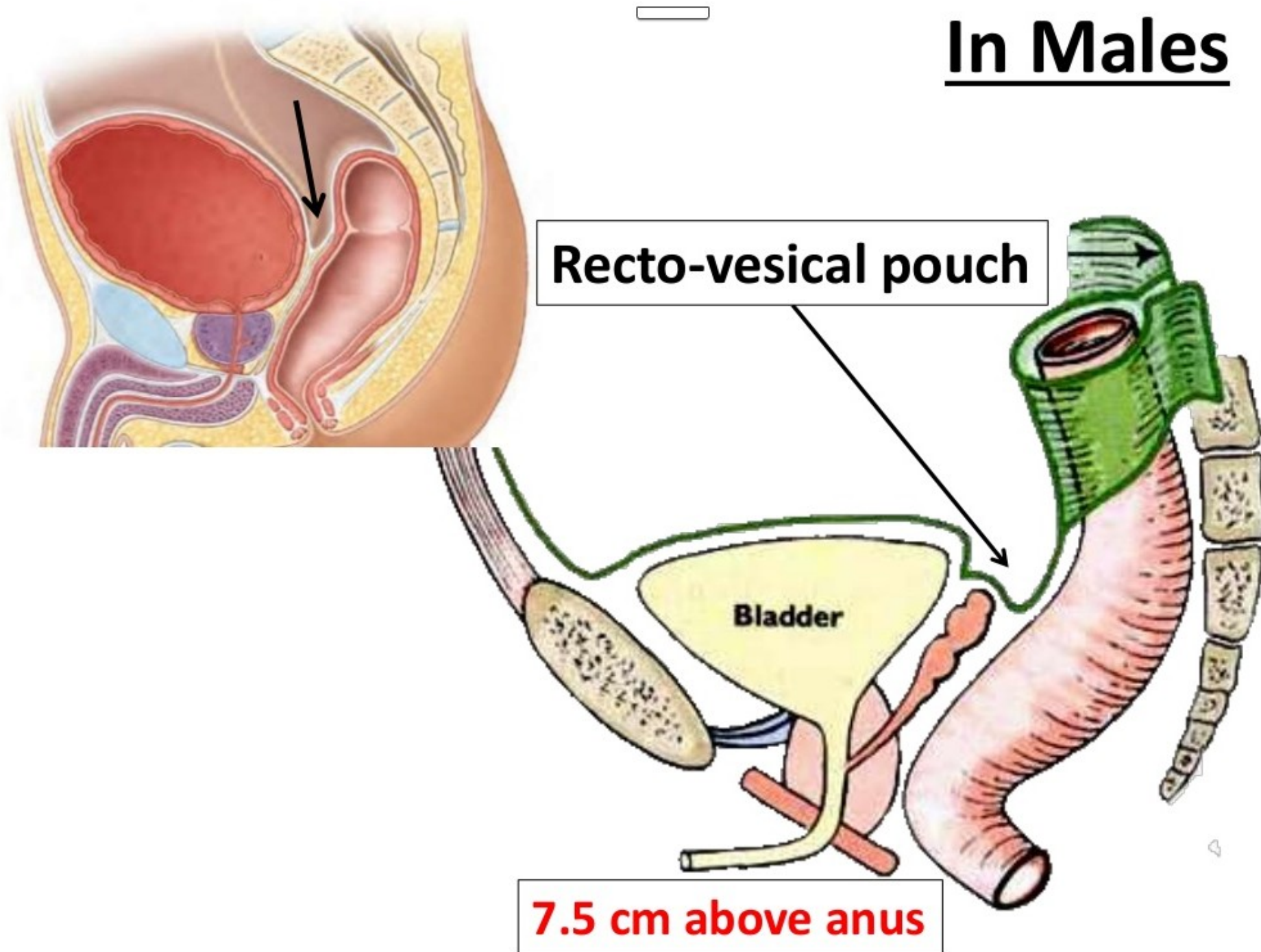
Differ in Male & Female

Reflection



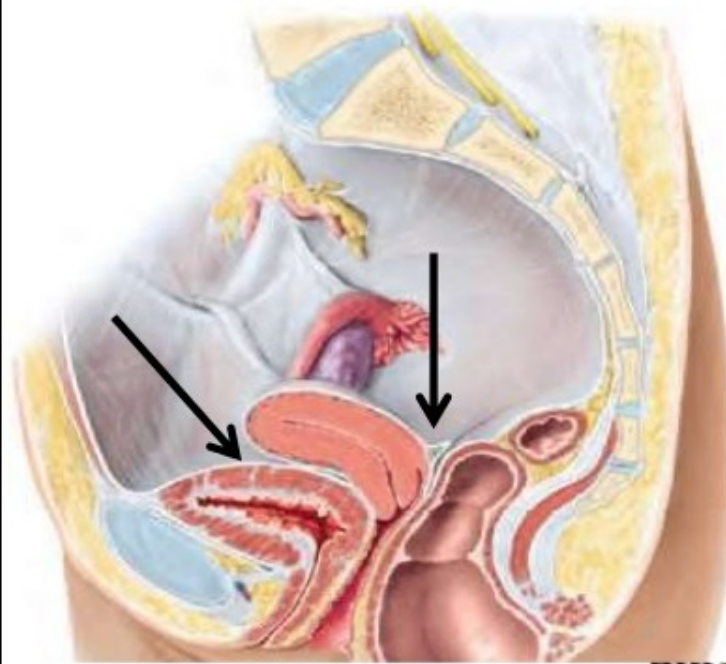
In Males

Clip slide



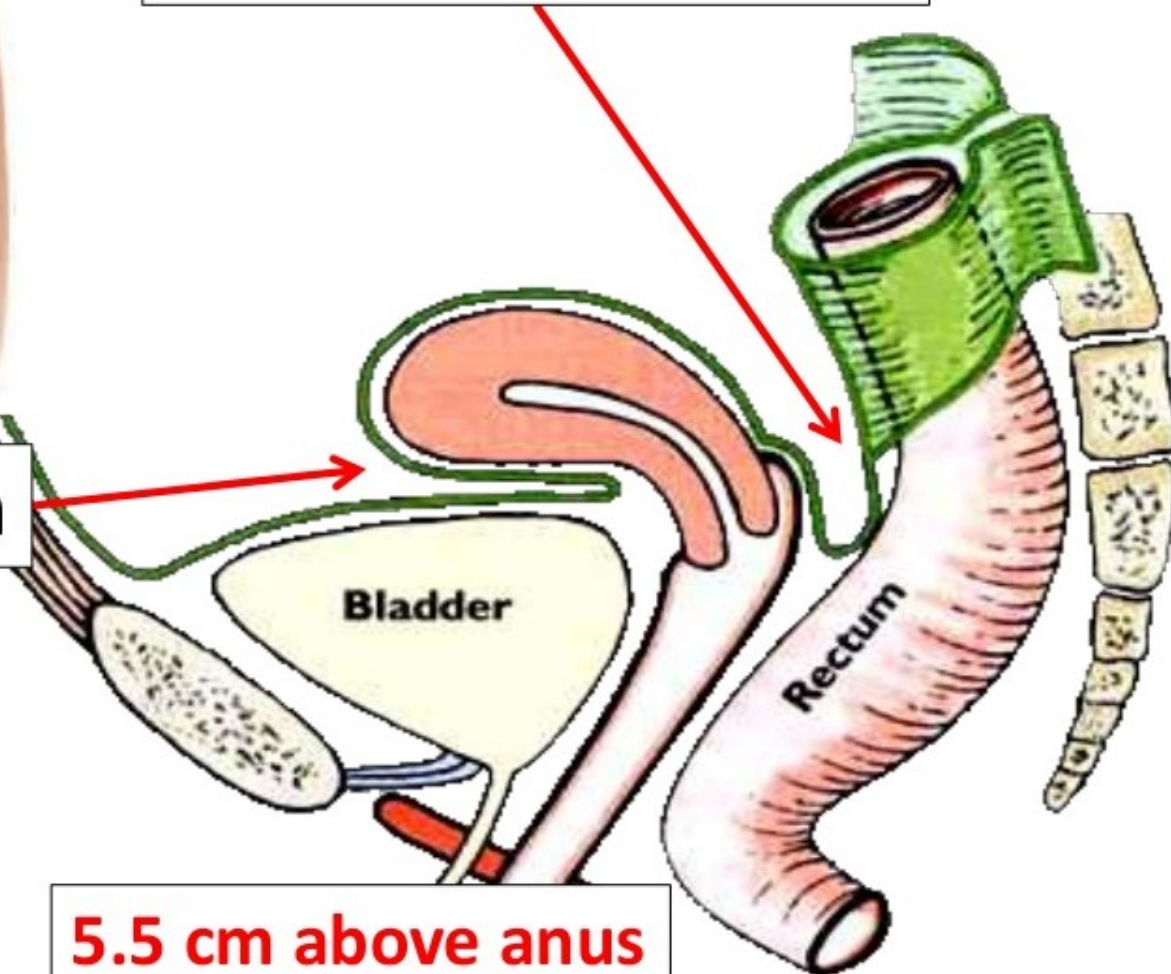
In Females

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**Recto-uterine pouch
of Douglas**

Utero-vesical pouch



5.5 cm above anus

THE RECTUM

:Peritoneal coverings and reflections

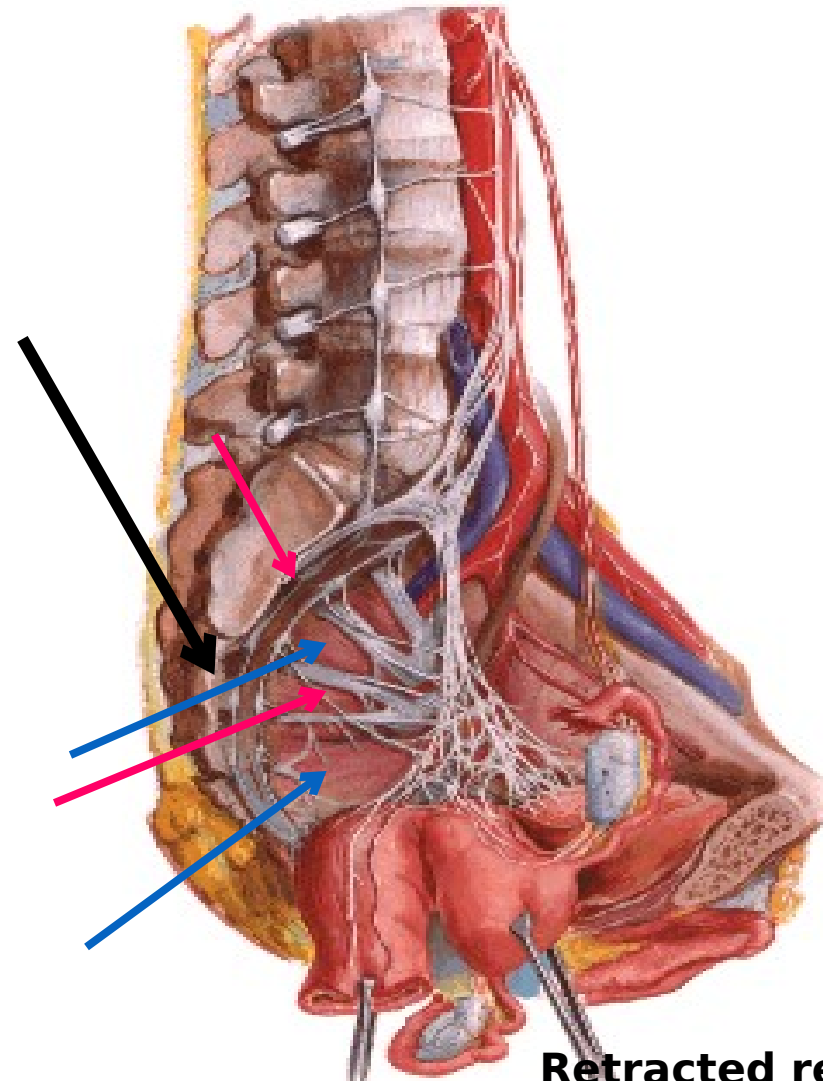
- I. Upper 1/3 : is covered in front and both sides to form pararectal fossae.
- II. Middle 1/3 : is covered only in front.
- III. Lower 1/3 : is devoid of peritoneal covering.

❑ At junction of the middle and lower 1/3, the peritoneum is reflected to form:

Rectovesical pouch :upper part of the base of the bladder in male **rectovaginal pouch**: posterior (vaginal fornix in female)

Posterior Relations of Rectum

- similar in males & females :
(bones/muscles/
nerves/vs)
- Sacrum & coccyx
- Piriformis, coccygeus & levator ani
- Sympathetic chain, lower 3 sacral nerves & coccygeal nerve
- Sup rectal, median sacral & lateral sacral vessels



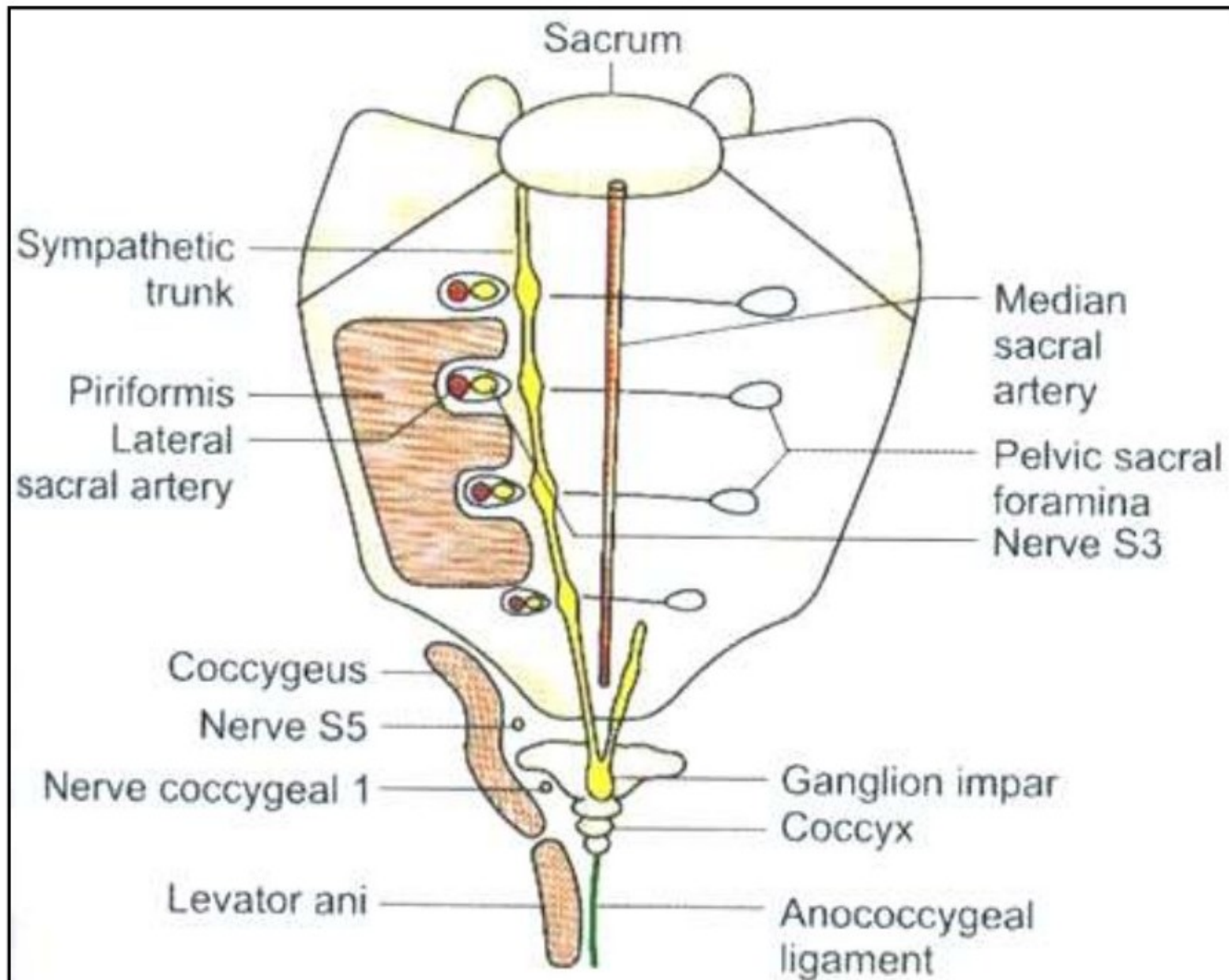
Frank H. Netter
Atlas of Human Anatomy
6th edition

Retracted rectum

Relations

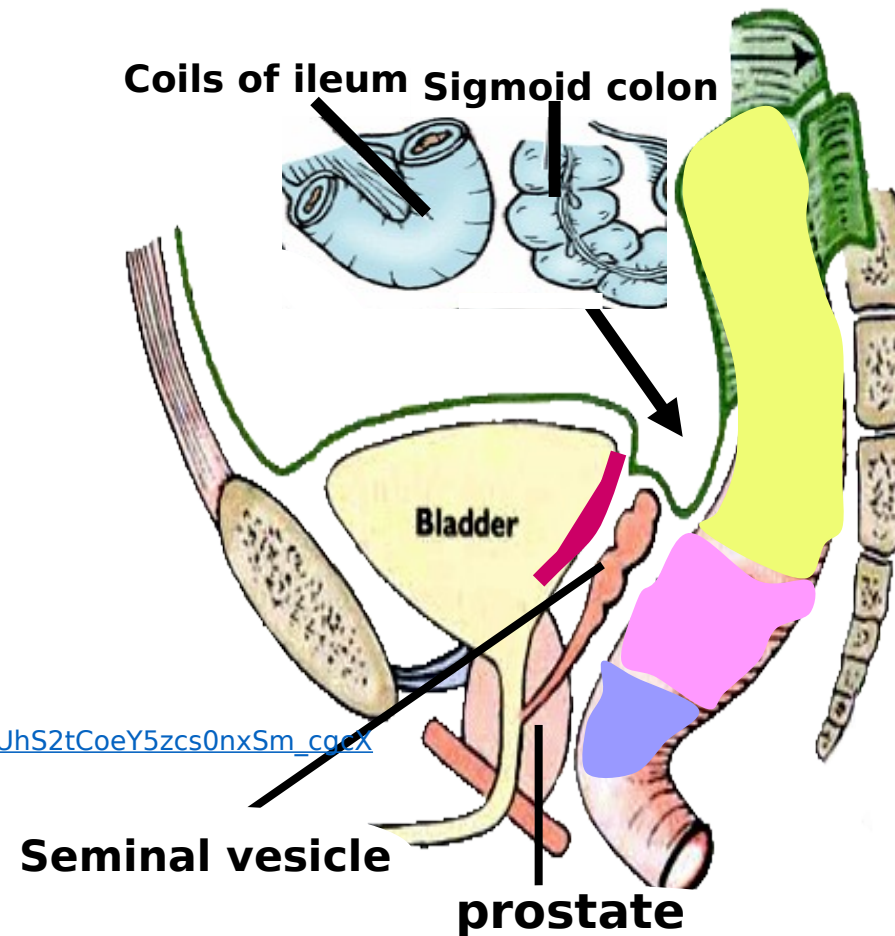
General Relations - Posterior

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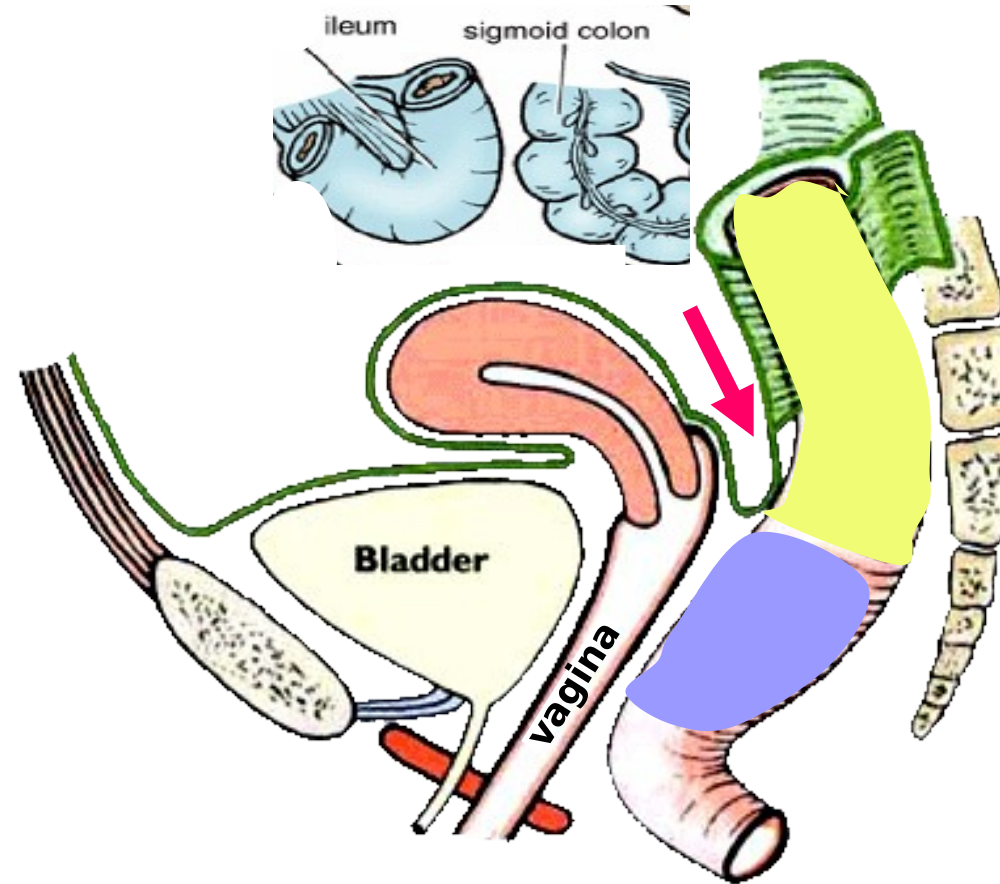
Anterior relations of rectum in Males

- **Upper 2/3** □ coils of ileum & sigmoid colon in rectovesical pouch
- **Lower 1/3** □ base of bladder, vas & seminal vesicles
- **Ampulla** □ prostate



Anterior relations of rectum in females

- **Upper 2/3** □ coils of ileum & sigmoid colon in **Douglas pouch** (rectouterine pouch)
- **Lower 1/3** □ back of vagina with no



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THE RECTUM

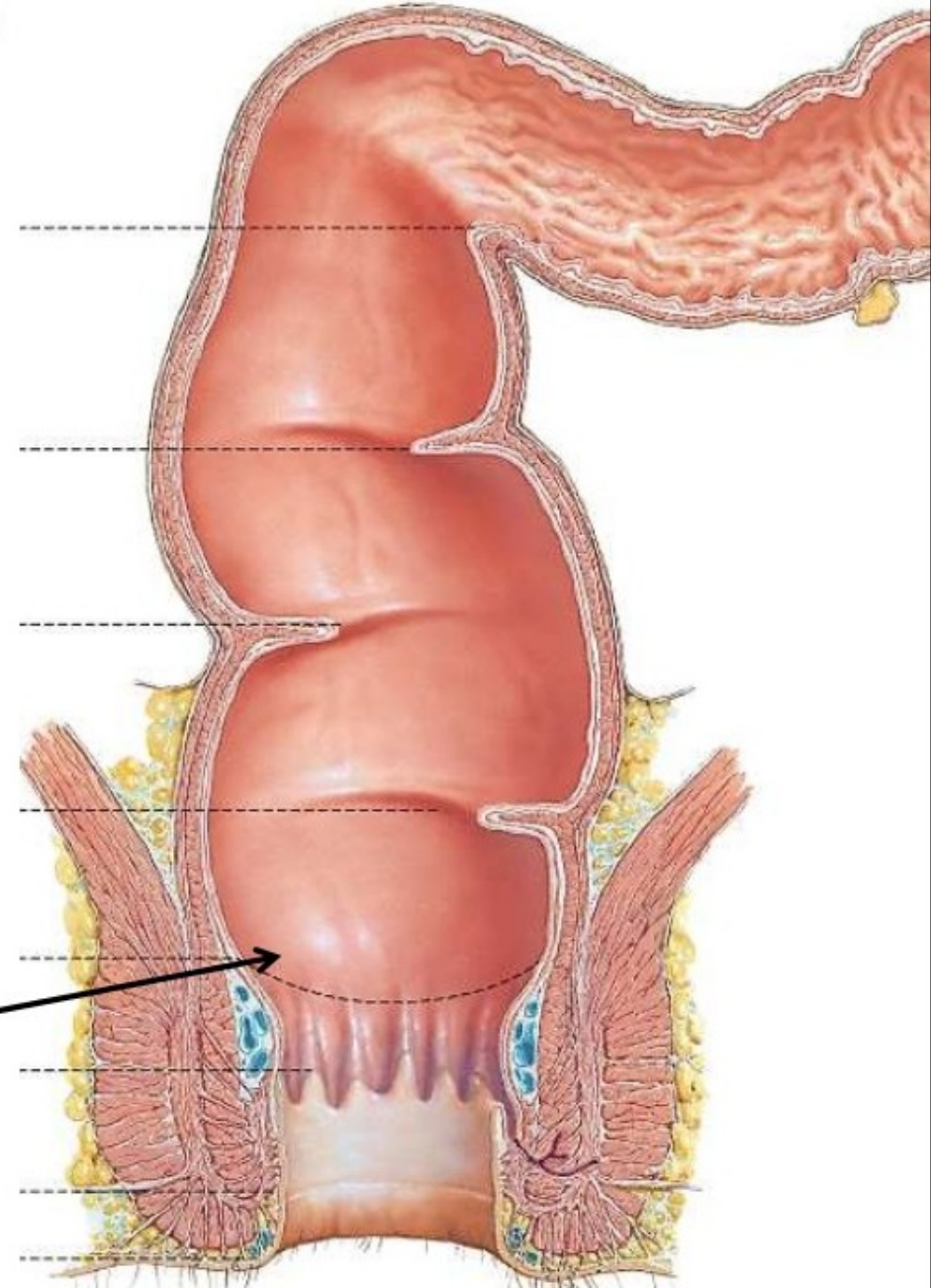
- **Relations:**

- **1- Anteriorly**

	In male	In female
* Upper 2/3 (above peritoneal reflection).	Rectovesical pouch contains pelvic colon and coils of ileum.	Rectovaginal pouch contains pelvic colon and coils of ileum.
* Lower 1/3 (below peritoneal reflection).	-Base of urinary bladder with seminal vesicle and ampulla of vas inbetween. -Prostate	- Middle part (middle 2/4) of vagina.

Interior of Rectum

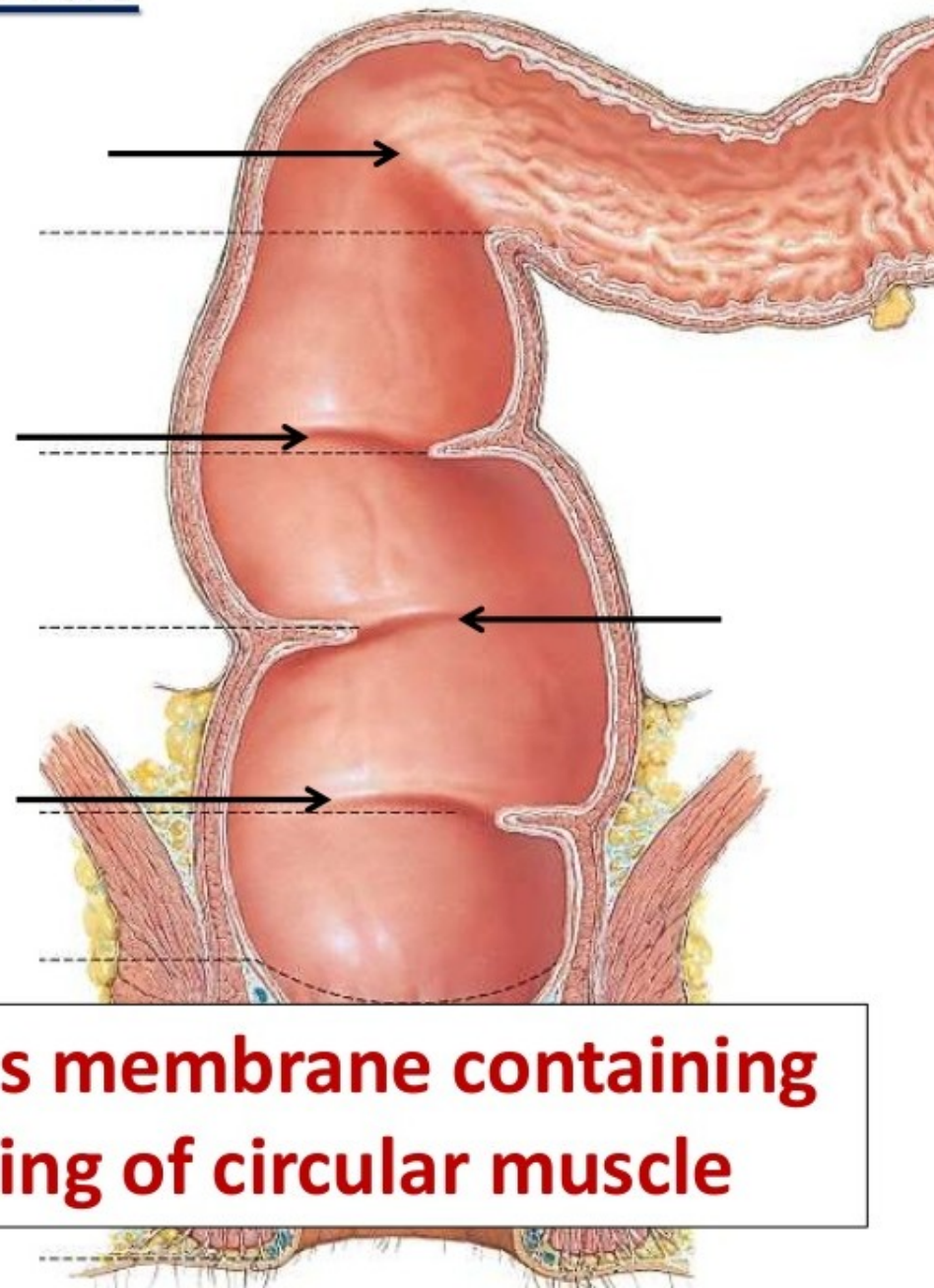
- Mucosal folds
- 2 types
 - Temporary
 - Permanent
- Temporary:
 - Longitudinal
 - In Lower part
 - Disappear on distension



Permanent Mucous folds

Houston's Valves

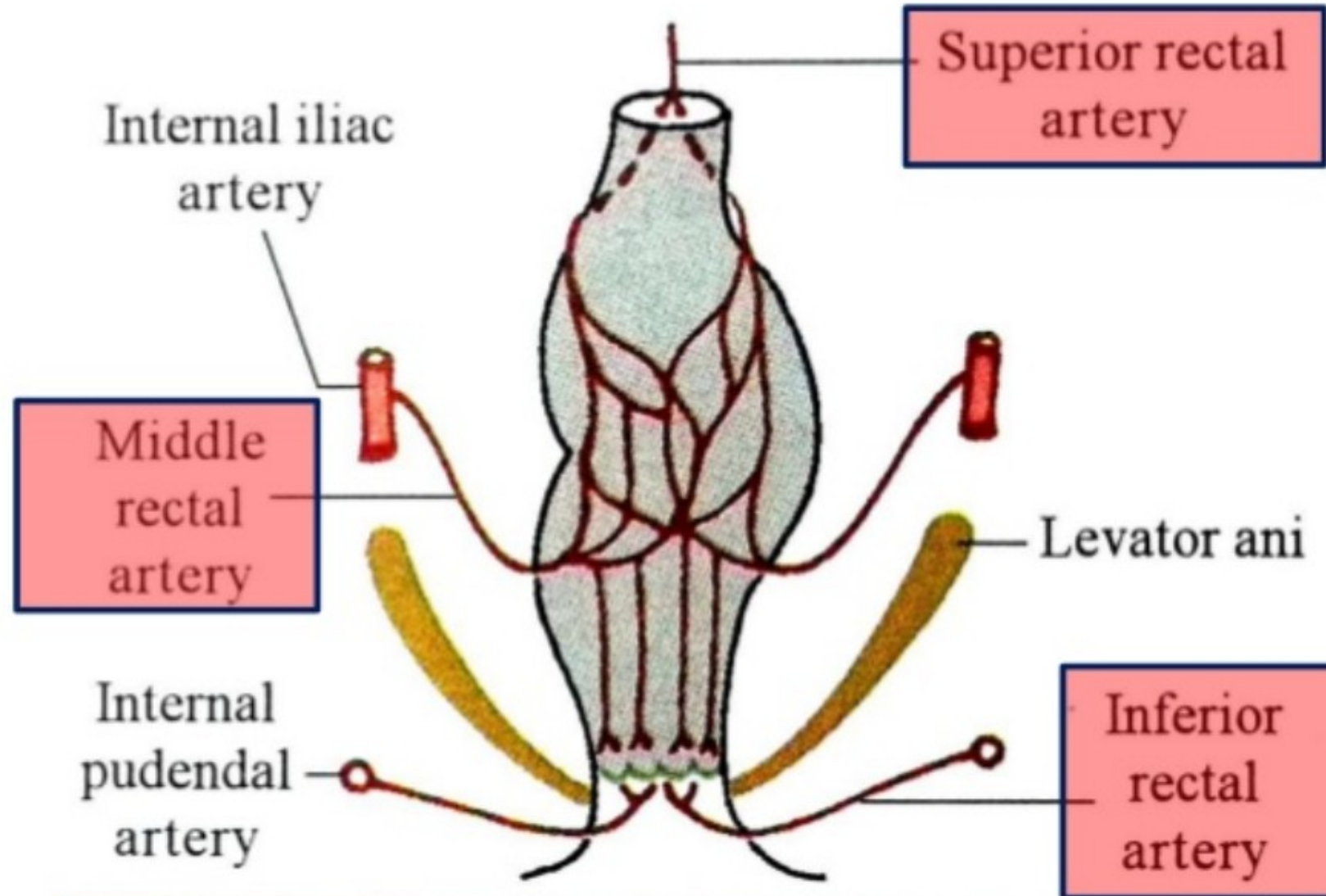
- Horizontal
- Semilunar
- Along Concavity of lateral curves



Reduplication of mucous membrane containing submucosa & thickening of circular muscle

Arterial Supply

Five rectal arteries



Arterial Supply

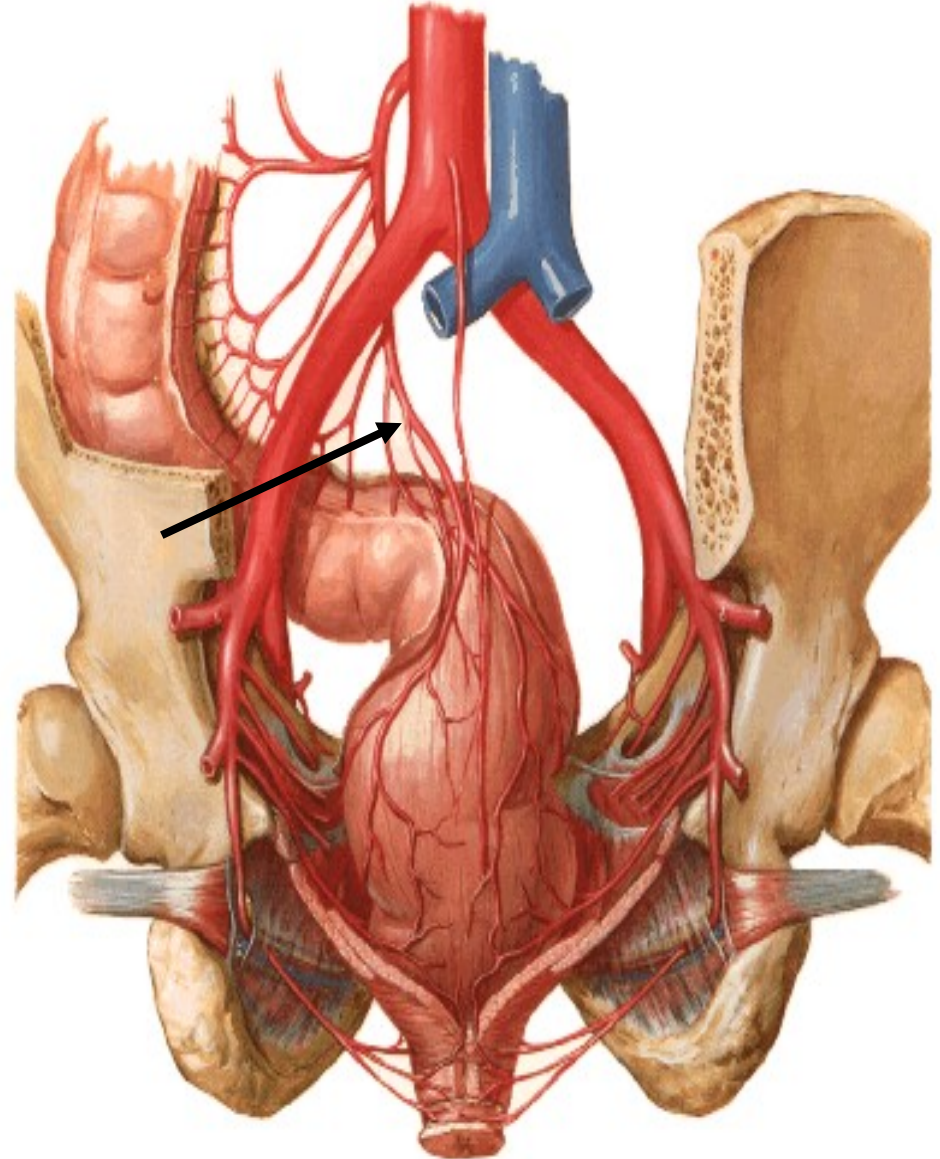
Continuation of IMA

Principal artery of rectum

Entire mucosa and upper musculature

Straight vessels arise from plexus –
anastomose with inferior rectal artery

Superior rectal artery



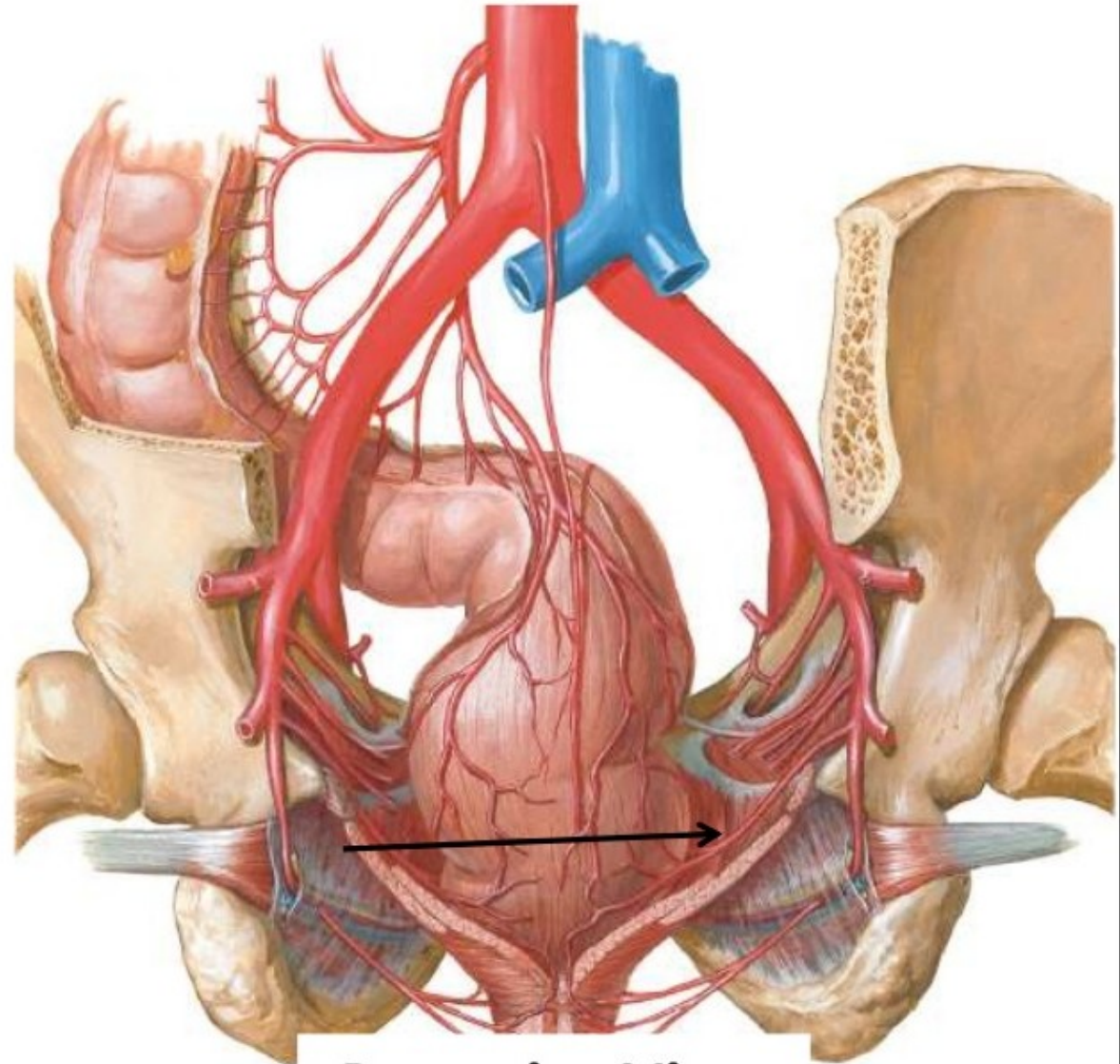
Arterial Supply

Middle rectal artery

Clip slide

Branch of Anterior
division of Internal
Iliac Artery

Supply lower part



Posterior View

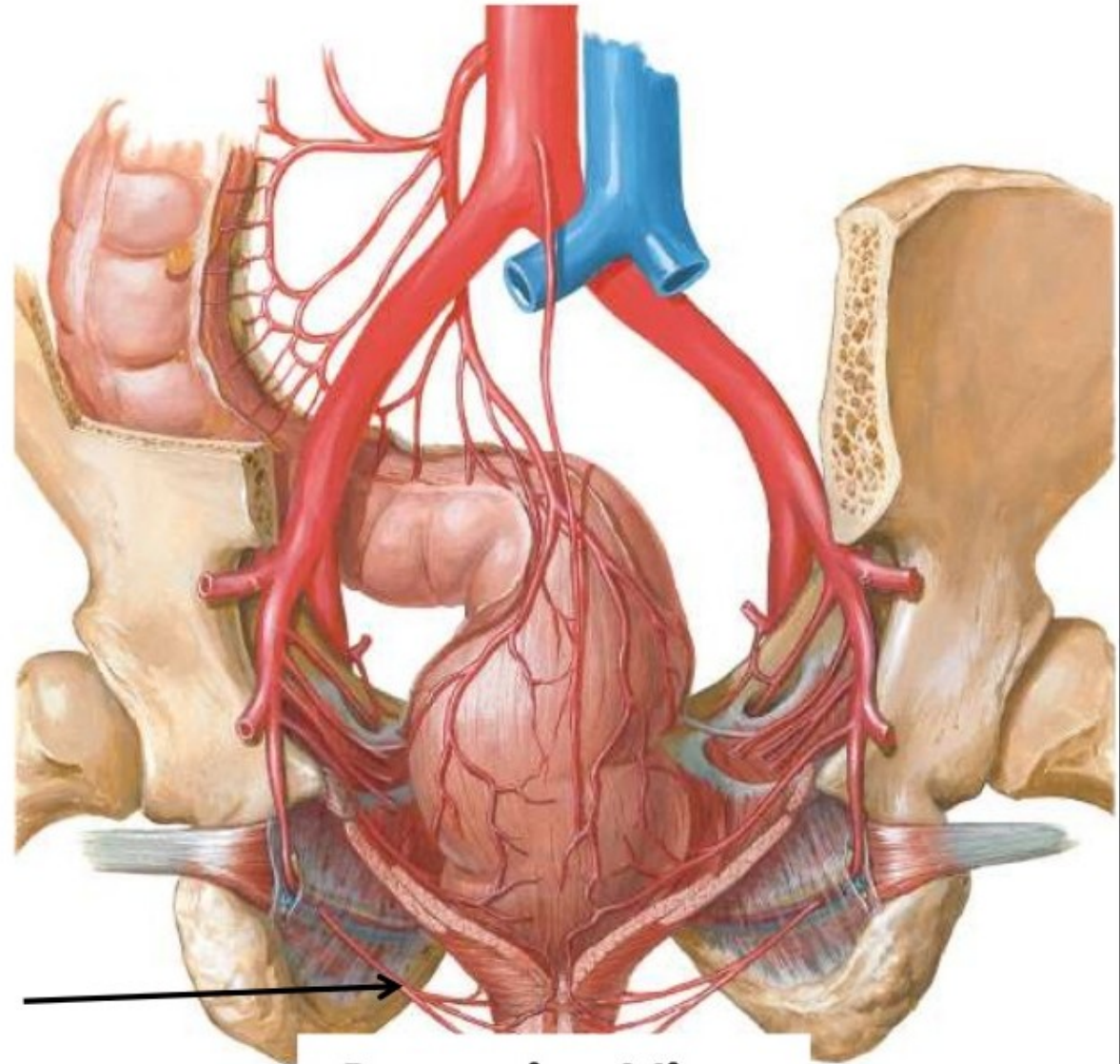
Arterial Supply

Inferior rectal artery

Clip slide

Branch of Internal
Pudendal Artery

Supply peri-anal skin
& Sphincter ani



Posterior View

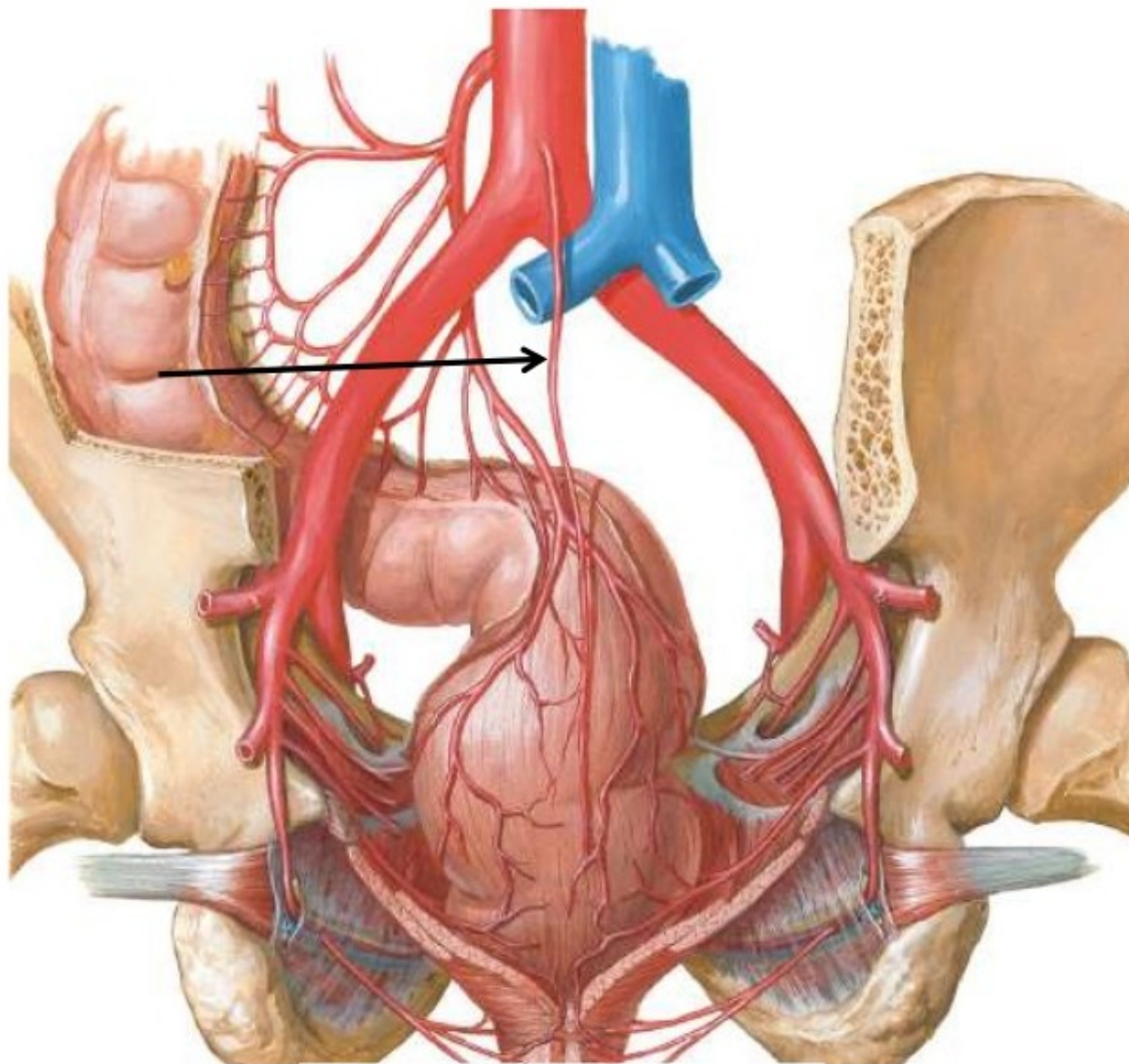
Arterial Supply

Median Sacral artery

Clip slide

Branch of Aorta

Supply posterior wall
of Ano-rectal
Junction



Venous Drainage

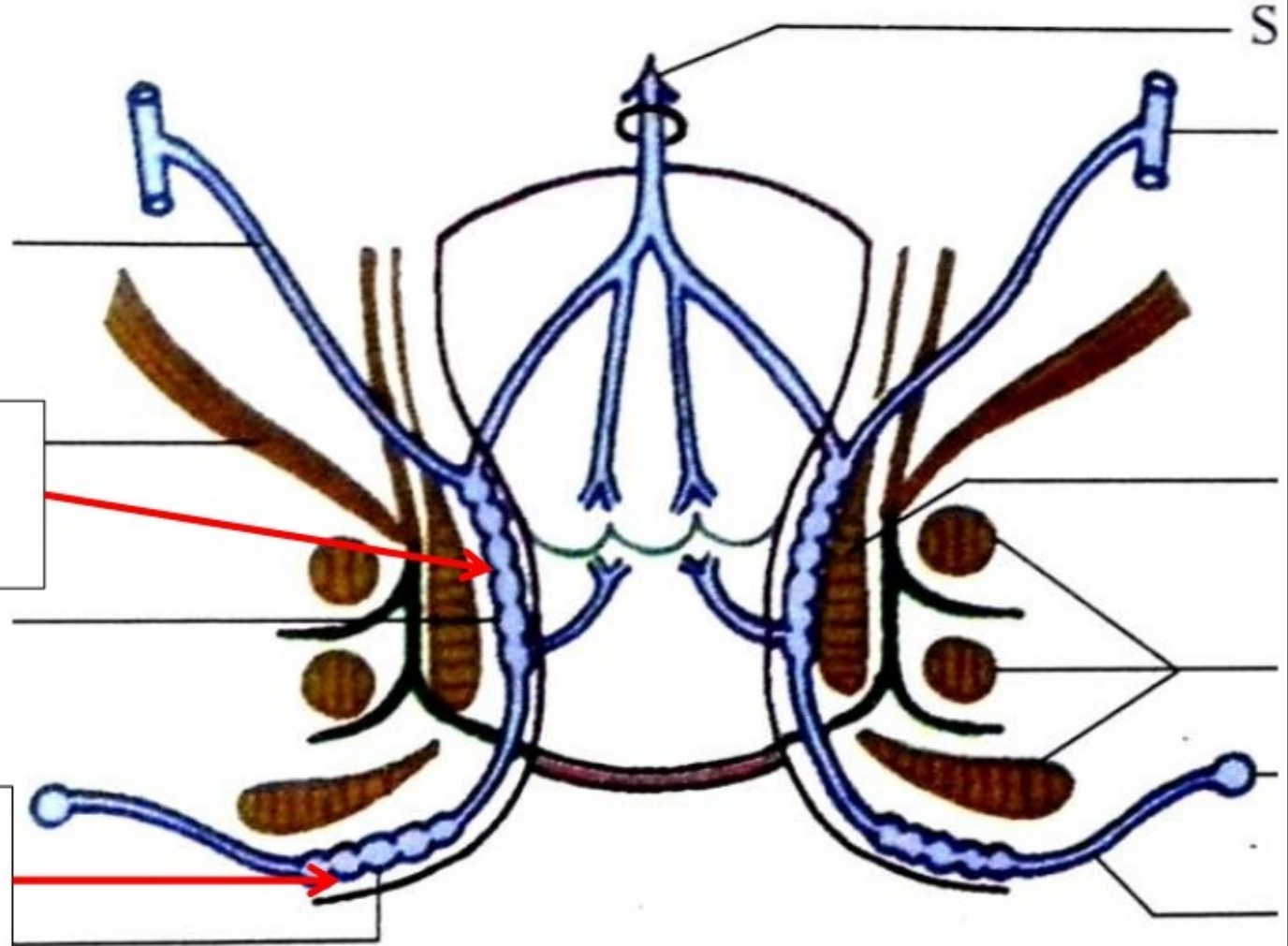
Arranged in plexus

Annulus Haemorrhoidalis

2 sets

Internal rectal
venous plexus

External rectal
venous plexus



Venous Drainage

Porto-Caval Anastomosis

Six Radical Veins

Internal rectal
venous plexus

External rectal
venous plexus

Inferior Mesenteric Vein

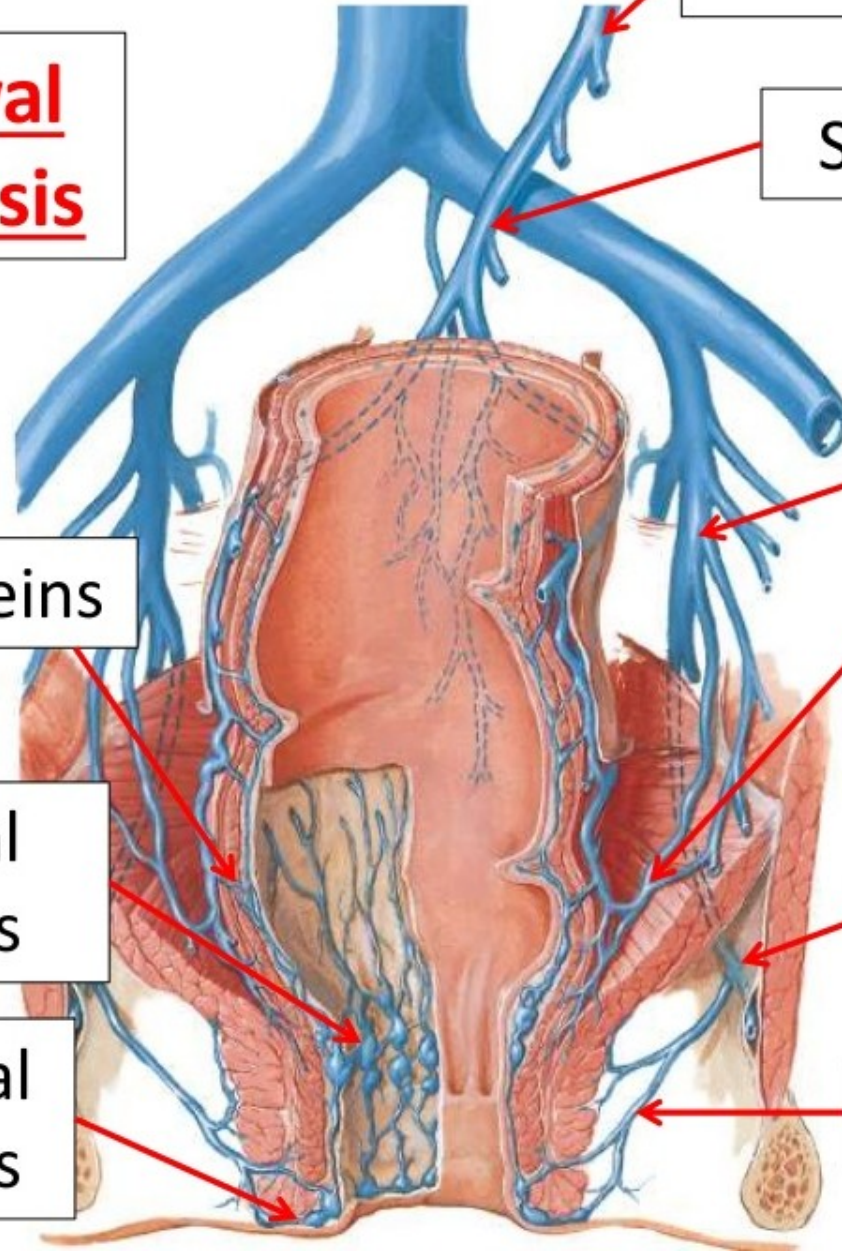
Superior Rectal Vein

Internal iliac Vein

Middle Rectal Vein

Internal Pudendal
Vein

Inferior Rectal Vein



Lymphatic Drainage

Press **Esc** to exit full screen

Clip slide

From Middle Part

From Upper Part

Internal iliac nodes

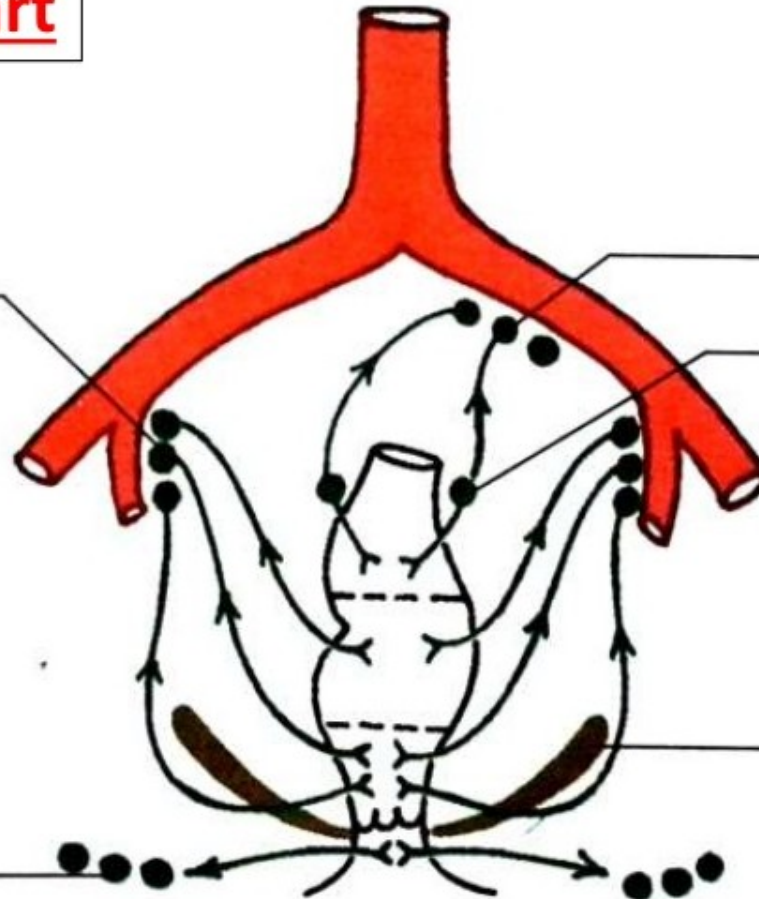
Left common iliac nodes

Para-rectal nodes

Superficial inguinal lymph nodes

Levator ani

From Lower Part



Nerve Supply

Sympathetic:

- Sup Hypogastric plexus (L1 & L2)
- Vasomotor
- Stimulate Sphincter & Inhibit musculature

Parasympathetic:

- Pelvic splanchnic nerves (S2, S3 & S4)
- Secreto-motor
- Stimulate peristalsis & Inhibit sphincter

Applied anatomy

- **What can a doctor examine by doing a digital rectal examination ?**

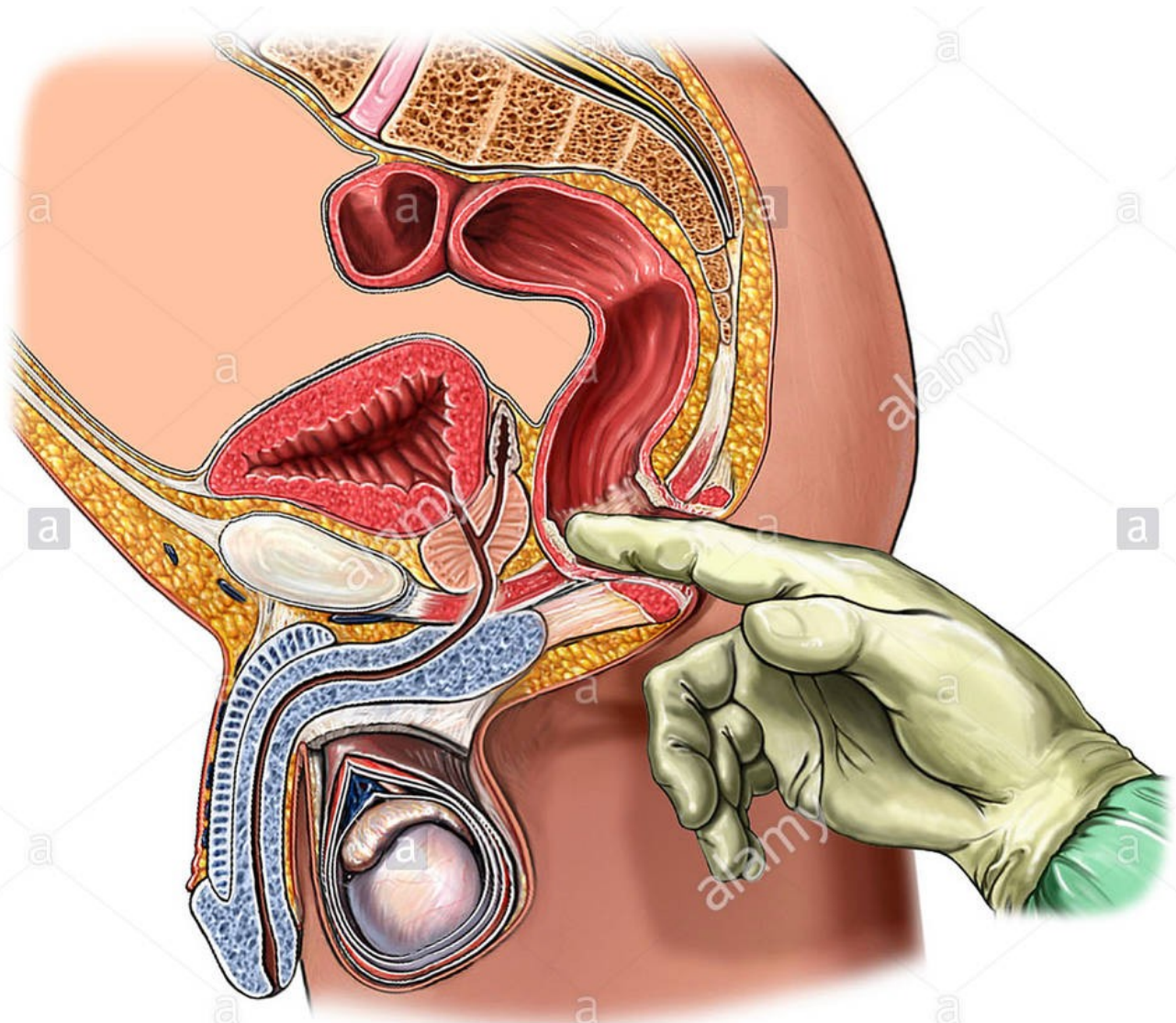


The following structures can be palpated anteriorly in the male with the index finger in the : rectum

rectovesical pouch/base of bladder/ vas / seminal vesicle

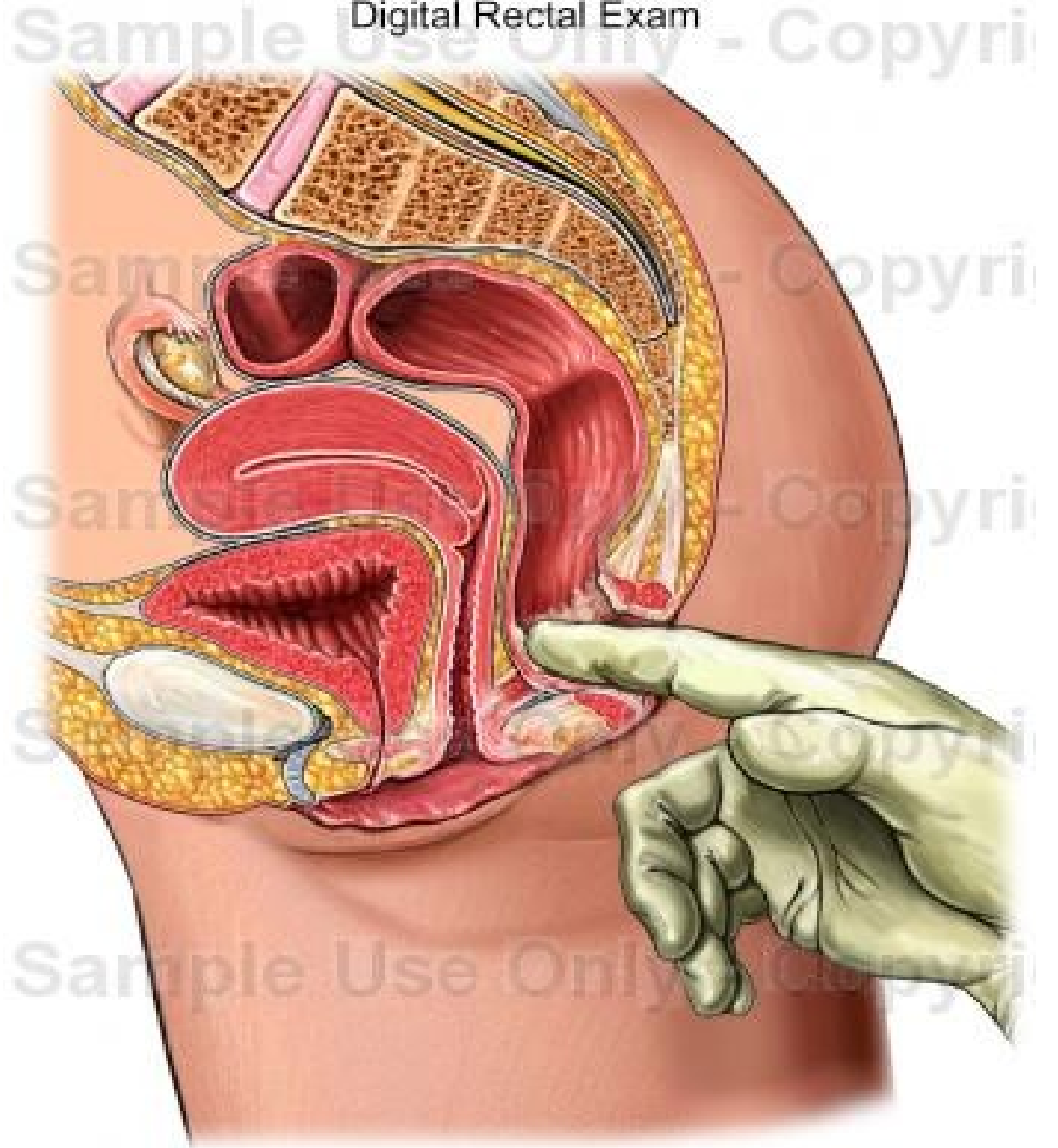
☐ **prostate**

☐ **bulb of penis**



The following structures can be palpated anteriorly in the female with the index finger in : the rectum

□
**rectouterine pouch
Vagina
cervix of uterus**



THE END



Suggested Reading:

Clinical Anatomy for Medical Students: Richard S. Snell
Pages 332- 336 & 397